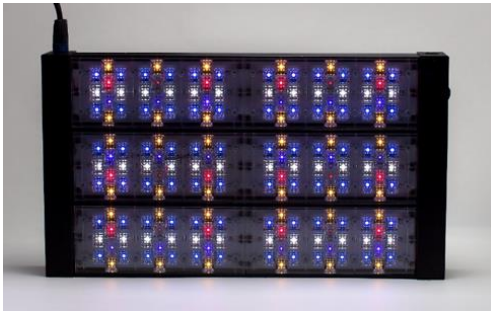


# CRAVE LED System



*Advanced Lighting for Advanced Thinkers*



# Instruction Manual



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## **AcroOptics CRAVE Lighting Systems**

Thank you for purchasing the CRAVE LED Lighting System. CRAVE systems are powerful and flexible lighting solutions for coral reef aquariums. The CRAVE LED System combines a mix of LED color-channels that specifically target the high efficiency absorption bands of chlorophyll, while providing the broad-spectrum output and water-penetrating wavelengths that maximize both the appearance and health of your tank. CRAVE provides the ideal growing environment for corals, clams, and other invertebrates by uniformly blending light over the entire area of the water surface, ensuring equal distribution without hot-spots or dead zones. The 9 inch focal length simplifies tank maintenance by providing easy access to your aquarium without moving the light. CRAVE Systems can be programmed to meet your specific needs, from a simple on/off schedule to a full annual solar and lunar schedule from any location on earth. Schedules can be downloaded by visiting our website at [AcroOptics.com](http://AcroOptics.com). Simply select the desired location from the map under Solar Lunar Calculator on our tools menu and you can generate a schedule that will mimic the sunrise, sunset, moonrise and lunar phase for any location you wish. You'll also be able to set the spectrum independent of the timing for even more control. The CRAVE LED's small thermal footprint reduces electrical consumption, and heat transfer to your aquarium, improving tank stability and creating a healthy environment for your livestock. With a 3 year hassle-free warranty, high-quality components, and superior design,



CRAVE Systems will provide consistent, uniform light for many years to come.

## Engineering Highlights

- **High-quality Optics:** TIR lens optics blend and focus the light where it is needed, minimizing spill-over/glare while providing ample space to work without removing the fixture.
- **Very Large Array Design:** VLA eliminates hot spots and dead zones by ensuring a uniform light distribution over the entire aquarium.
- **Flexibility:** The ability to daisy-chain the CRAVE 24 fixtures allows for a pendant arrangement for larger or multiple-tank configurations.
- **Durability:** High-quality components, exceptional design, custom anodized aluminum heatsink, and powder coated sheet metal for a rugged, all metal housing mean the Crave System will require minimal maintenance and last for many years.
- **Longevity:** Due to the advanced design and reduced power draw of the fixture, the light output after 50,000 hours of use will be within 90% of the output the first day it was turned on.
- **Low Lifetime Cost:** With no bulbs to replace, up to 75% less electrical usage, 80% less heat output, and up to 50% less water evaporation compared with metal halide fixtures, the CRAVE System has a lower lifetime cost.
- **Room to Grow:** Updateable firmware ensures the fixture can keep up to date with the latest improvements.



## Basic Set Up

Both the fixture and the power supply have input terminals for the DC power cord. The DC cord has alignment tabs and a thumb release to ensure a robust connection. To install the DC cord, align the tabs with the slots in the terminal, insert, and then rotate clockwise  $\frac{1}{4}$  turn. You will hear a click when the cord is seated correctly. Repeat on the power supply.



*View of the power plug inputs. Please note the alignment slots. The DC cord plug should align with these slots.*

The fixture has two terminals. Either one can be used to power the fixture. The second may be used to daisy-chain additional fixtures.

To remove the DC cord, slide the silver tab on the top of the cord end backwards, gently turn counter-



clockwise, and then remove.



*Removing the DC cord from the fixture.*

To install the wireless antenna, locate the antenna attachment point. Remove the black plastic cap, then screw the antenna clockwise until secure. Once the antenna has been attached, it may be folded flat, or rotated to any desired position.



*Side-angle view of the Wi-Fi antenna attachment.*

Both the fixture and the power supply have an on/off switch. The on/off switch on the power supply controls power to the fixture. If this is on, the control



board is powered, and the LCD screen will be lit. The fixture can be configured when the control board is on.

The on/off switch on the fixture controls power to the diodes. This can be used to turn the light on or off without affecting the control board.

Note: Programs and settings saved to the fixture are persistent – they will stay on the fixture regardless of whether this fixture is powered on or not.

## Onboard Control Panel



1. *USB Port*
2. *Diode Power Switch*
3. *LCD Display*
4. *Navigation Buttons*
  - A. *Up*
  - B. *Left*
  - C. *Right*
  - D. *Down*



## Using the Onboard Control Panel

If the power supply is plugged in and turned on, the LCD screen will be lit and you can access the menu functions and settings.

- Pressing any of the navigational buttons will access the menu.
- The Up and Down buttons will scroll through the menu items.
- The Right button will select a sub-menu or value. The Left button will return to the prior screen, or exit the menu.
- After all of the required values have been set, you will be prompted to save the changes you have made.

The buttons will allow you to navigate through the menu tree, and set or edit values as you go. There are two main menus, LED Control and Setup. Each main menu has sub-menus for specific settings.

CRAVE System fixtures operate in Modes. Each Mode has a set of values required for it to run. Details can be found in the Operational Modes Overview section, below, as well as in Appendix A.

## Main Menus

### LED Control

This allows the user to select the operational mode, and set the values required by that mode. When values are entered, they are stored, and will stay in place until edited,



even if the fixture is turned off, or operating in a different mode.

### *LED Control Sub-menus*

1. **Set LED Mode** – allows user to select from the five available mode options for running the CRAVE System.
2. **Set Constant Values** – allows user to enter the values of the individual color-channels for operating in Constant mode. CRAVE's internal timer is not activated in this mode and color-channel values will remain constant unless adjusted by user.
3. **Set Basic Values** – allows the user to enter the required values of the individual color-channels for operating in Basic mode. Also, allows user to enter on/off time and duration.
4. **Set Day Values** – allows the user to enter the required values of the individual color-channels for the Day mode.
5. **Set Ambient Values** – allows the user to enter a comfortable intensity for the white diodes only. This setting is designed for the purpose of tank maintenance, and not a regular lighting program.

### **Setup**

The setup menu contains controls for the LCD display, including a selection of values that can be displayed on each of the four lines. It is also where the clock is set.

### *Setup Sub-menus*



**Set LCD:** allows the user to change the back-light and contrast of the LCD display, as well as the contents of each of the four display rows.

**Set Date/Time:** used to set the date and time on the fixture clock.

**Restore Defaults:** resets color-channel intensities to default settings, resets internal timer, as well as the date and time settings.

## **Operational Modes Overview**

The CRAVE System supports 5 operational Modes, or methods of running the fixture. These span the most simplistic, such as an external timer, to the most advanced, where you can define the number of days, channel output, and two separate simultaneous timing schedules. Four of the modes can be programmed directly through the LCD screen on the fixture, and all can be programmed easily using the AcroOptics User Interface program. For a quick reference see Appendix A – Mode Reference Chart

\* Note: All modes come with default settings. The light levels for the defaults are set low to avoid shocking any livestock, but they should still be reviewed given the particular livestock, and specifications of the current lighting system.

### ***Constant:***

Assumes either use of an external timer or manually turning the light on/off. The only settings for the light



output are the color-channel values which remain constant until adjusted by user.

### *Basic:*

One step above Constant. Uses the internal clock to turn the fixture on/off. The only settings for the light are the color-channel values and on/off cycle.

### *Day:*

Allows user to set individual color-channel intensities for solar and lunar cycles, as well as sunrise time and duration, moonrise time and duration, and the phase of the moon.

### *Custom:*

Custom Mode allows all of the settings the fixture has to be modified as you see fit. There are two flavors of Custom Mode, Annual and User-defined.

**Annual** programs assume a 365 day year, and use one timing cycle for the sun, and one for the moon. The sun and moon values are set using the solar/lunar schedules that can be downloaded from our web site. Instructions for obtaining and using the solar/lunar schedules can be found below in Creating and Editing Programs under the Custom Annual Programs section.

**User-defined** allows you to set the length of the program in days, and set all of the values by day for both timing cycles.



Custom programs require too many values to be easily programmed using the LCD control panel. Use the fixture control software for creating or editing values for the Custom mode.

### ***Ambient:***

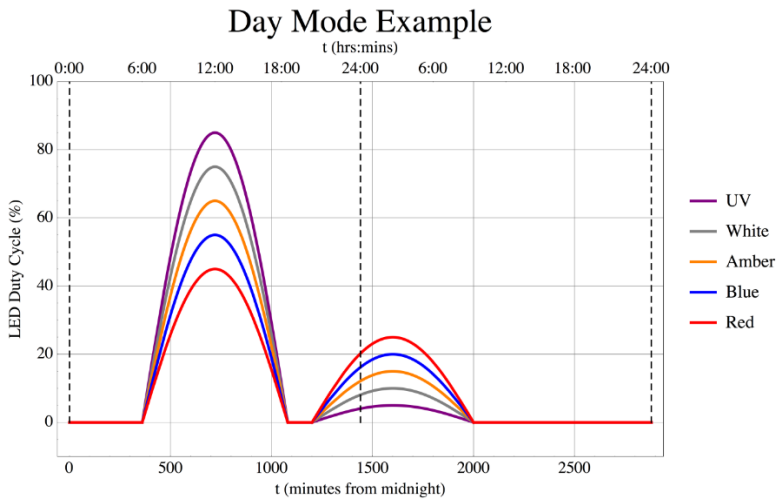
Activates the white diodes at a low intensity. This mode is designed to provide a comfortable light level during tank maintenance only, not intended to be run as a regular lighting program.

## **Sunrise and Moonrise Functions**

In Day or Custom mode, the sun and moon rise times and lengths are used to calculate a ramp up and ramp down for the light output associated with each source. The graph below presents a 1 day example of the ramp function. In this example, the sunrise time is 6:00 AM, with a length of 13 hours, and the moon is scheduled to rise at 8:30 pm with a length of 12 hours.

The high point of each curve (85% for UV Sun in the example) is the value that is set for the color-channel on the fixture. You can see if this cycle was repeated on a second day, that the moon will still be in place. In such circumstances, the moon and sun values are summed to arrive at the total output.





## Software Control

To download the CRAVE System software go to [AcroOptics.com](http://AcroOptics.com) and look under the **Tools menu**. The CRAVE software allows the user to operate the light in all 5 modes, and is the recommended method for programming parameters in the **Custom Annual** and **Custom Defined** modes. Custom light cycles can be programmed for up to 500 days, with variable light output by day. The software also makes configuring multiple fixtures quick and easy.

**\*Note** – for Wi-Fi access attach the included Wi-Fi antenna by removing the black-plastic cap to the right of the control buttons, than screw antenna clockwise until secure.



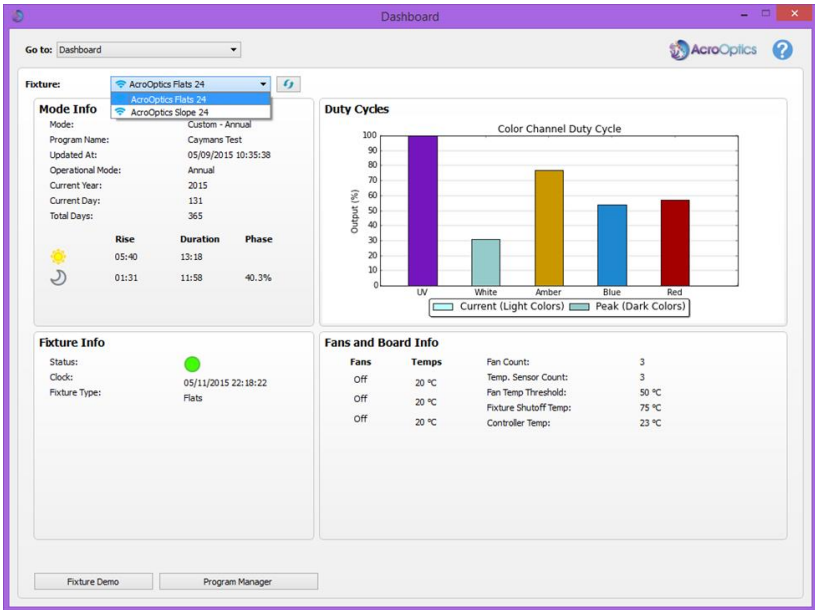
The CRAVE System software uses five individual screens to program and monitor the operations of all fixtures. These include:

- **Dashboard** – displays the current state and operational settings of the fixture.
- **Configuration** – Contains user-specific settings, such as fixture names, Wifi configuration, and clock settings.
- **Program Manager** – Drag and drop function for placing programs onto fixture(s).
- **Advanced** – firmware updating and troubleshooting.
- **Program Settings** – this screen can be accessed from several locations, and the appearance of the screen is dictated by the Mode of the program to be created or edited.

Select the desired screen, from any of the screens, by clicking on the scroll down menu located in the upper left-hand corner, next to the words, **Go to:**



## Dashboard Screen



### Fixture

Shows the name of the fixture currently displayed on the Dashboard Screen.

- When multiple fixtures are in use, specific fixtures can be selected from the drop down menu.
- The fixture list can be refreshed using the button to the right.

### Mode Info

**Mode:** Displays the current mode status of the selected fixture.

**Program Name:** Displays the name of the currently selected program.



**Updated At:** Displays the date and time of the last saved edit to the program in use.

**Operational Mode:** Mode name

**Current Year/Day:** The year and day number of the program running. Users can set the length of a Custom mode schedule up to 500 days. A program running an annual schedule will display the day of the year.

**Total Days:** Displays the number of days in the program.

**Rise:** The light period start time.

**Duration:** The amount of time the light period lasts.

**Phase:** The lunar phase.

### *Fixture Info*

- **Status:** Activity indicator
- **Clock:** Displays the current date and time settings for the selected fixture.
- **Fixture Type:** The CRAVE light profile of the fixture.

### *Duty Cycles*

Displays output percentages of each individual color-channel.

Modes with color-channel intensities that change throughout the 24 hour period are displayed with both current and peak output percentages.

### *Fans and Board Info*

**Fans:** Indicates if a given fan is on or off.



**Temps:** Displays current readings for the temperature sensors.

**Fan Count:** Displays the number of fans. CRAVE 24 has 3, and CRAVE 48 has 6.

**Temp. Sensor Count:** Displays number of active temperature sensors.

**Fan Temp Threshold:** The temperature value (Celsius) at which the fans trigger on.

**Fixture Shutoff Temp:** The temperature (Celsius) at which the LEDs

**Board Temp:** The temperature of the control board.

### ***Fixture Demo***

This button, located in the lower left-hand corner of the screen, cycles the CRAVE through the manufacturer's pre-programmed demo of the various color-channels and intensities.

### ***Program Manager***

This button, located in the lower left-hand corner, takes you to the Program Manager screen.



## Configuration Screen

Go to: Configuration

Fixtures: AcroOptics Flats 24

Fixture Name: AcroOptics Flats 24

Fixture Date: 05/11/2015 22:19:04 Sync

Fixture Type: Flats

**Display Settings**

Backlight: Dark  Bright

Contrast: Low  High

Line 1: Program Name

Line 2: Mode

Line 3: Date and Time

Line 4: Error type

**Program Info**

Set Mode: Custom

Program Name: Caymans Test

Year Mode: ☒ Annual ☐ Defined

Edit Program

Register Fixture Configure WiFi Save Changes

The Configuration screen allows the user to set or edit values such as the fixture name, date, and time. It includes the wireless configuration.

### *Fixture*

**Fixture Name:** User may customize a unique name for each fixture.

**Fixture Date:** Displays date and time to which fixture is set. User can set date and time.

**Sync:** Checking this radio button will set the fixture time to the clock time of the device from which it is accessed. It is not checked; the user can set the time as they wish.



### *Display Settings*

This controls the appearance of the LCD display.

**Backlight:** User may adjust the brightness of the LCD display.

**Contrast:** User may adjust the contrast of the LCD display.

**Lines 1 through 4:** User may cycle through scroll-down menu to determine which information is displayed on the LCD screen in the specified line.

### *Program Info*

This displays information for the currently selected program.

**Set Mode:** Use the drop-down menu to select the operational mode for the fixture.

**Program Name:** Displays the name of the program currently being run.

**Year Mode (Under Custom Mode Only):** Displays whether the current program is an annual schedule or of a user-defined length.

### *Register Fixture*

This button, located in the lower left-hand corner, allows the user to register their CRAVE System LED. User must register their CRAVE in order for the 3 year warranty to be in effect. Benefits of registering include: firmware update notifications, optional new product notifications, and access to AcroOptics user forums where questions, comments, and light programs are shared among CRAVE System users.



### *Configure Wi-Fi*

This Button, located in the lower left-hand corner, allows the user to connect wirelessly to the CRAVE System fixture. Network name and password are required. Once configured, the fixture can be connected to the GUI from the user settings screen.

### *Edit Program*

This button opens the program configuration screen for the mode of the program selected. For more information about the program configuration screens, please look in the ***Creating New Programs or Editing Existing Programs*** sections below.

Program options vary depending on which mode is currently selected.

**Constant:** user programs individual color-channel intensities only. Saved programs can be loaded by clicking on the **Import Values From** scroll menu, located at the bottom of the screen.

**Basic:** user programs on time, run duration, and individual color-channel intensities. CRAVE's internal timer is operational and will control the on/off schedule based on user selected time settings.

**Day:** user programs time and light settings for both solar and lunar cycles. User enters sunrise time and duration, moonrise time and duration, as well as, the starting phase



of the moon - by percent from new to full. Individual color-channel intensities for both the solar and lunar cycles are set separately by the user.

**Custom Annual:** user programs lunar and solar schedule by clicking on the **Browse** button and choosing the area of the globe that best represents the native habitat of the livestock being grown. CRAVE's software will automatically generate a sun and moon timing schedule similar to the selected region. Individual color-channel intensities for both the solar and lunar cycles are set separately by the user.

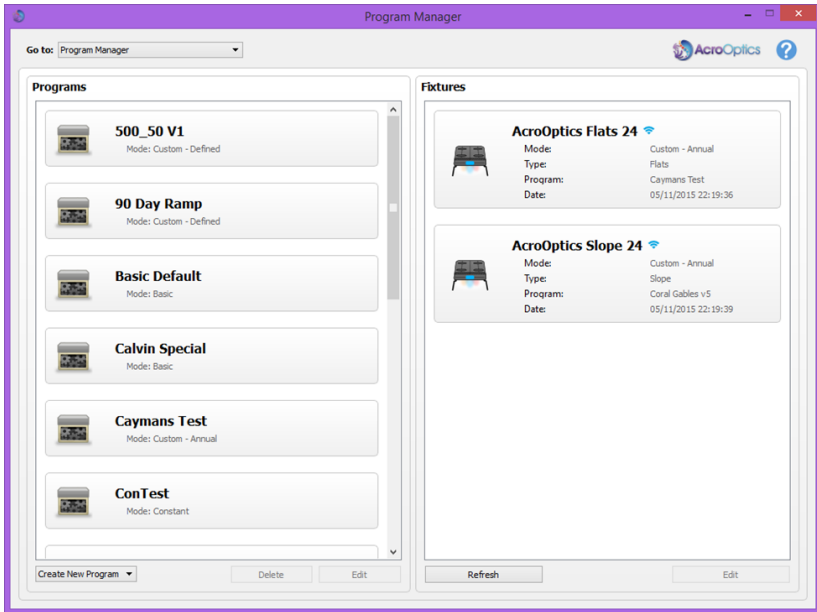
**Custom Defined:** user programs time and light settings for both solar and lunar cycles that can shift over a user-defined number of days, from 1 to 500. User selects the number of days in the schedule through the **day selection** interface. User enters sunrise time and duration, moonrise time and duration, as well as the starting phase of the moon by percent from new to full. User programs time settings and color-channel intensities for any specific day in the schedule. Settings are simultaneously applied to a range of days by selecting a start and end day from the **advanced selection** interface in the bottom left hand corner of the screen.

**Save Program:** This button saves all changes to time and light settings.

**Back:** This button takes the user to the previous screen.



## Program Manager Screen



The **Program Manager** allows for simple, drag and drop programming of any connected fixture. It also provides an easy user interface for creating new programs or editing existing programs. Creating or editing programs can be done without connecting to a fixture. The programs are saved locally and can be loaded to any fixture once connected.

To place a program on a connected fixture, select it with the cursor, and drag to the fixture you wish to program by holding down the left mouse button.



## Creating New Programs or Editing Existing Programs

Selecting the **Create New Program** button will open a drop-down menu for the modes. Once a mode is selected a screen will open with input fields for the required information for that type of program. **Appendix A** lists the requirements for each mode, but they are intuitive. Basic programs, for example, require values for each of the color channels, and a rise time and duration for the light cycle, A Day program will have inputs for the color channels, sunrise and length, moonrise and length, and moon phase.

The light cycles are labeled Sun and Moon, as that is the most common usage, but they are simply independent schedules which can overlap if desired. For example, a Day Mode program can have one start at 8:00 AM, running for 12 hours, and one starting at 10:00 AM and running for 10 hours. For the 10 hours they overlap, the total light output will be the sum of the two channels.

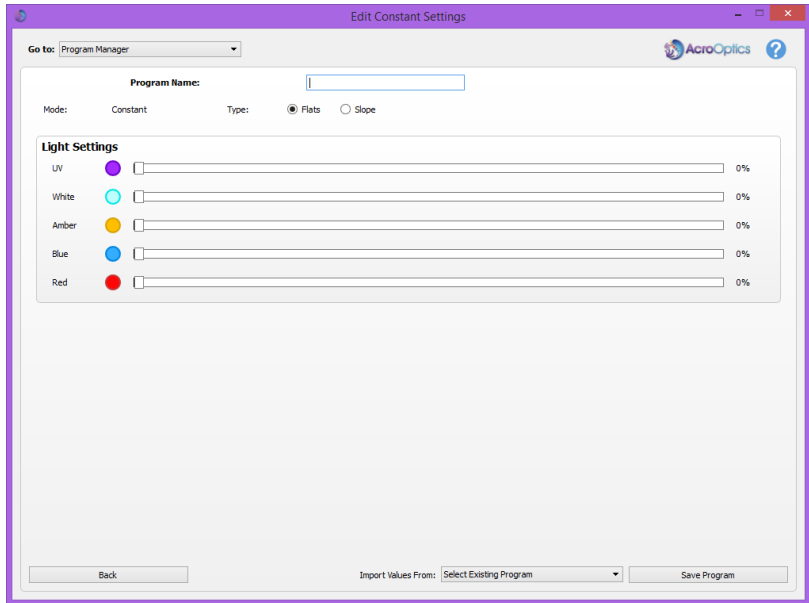
Existing programs can also be edited by selecting the fixture on which the program is running, and using the Edit button on the lower right of the Program Manager page. This is also available from the Edit Program button on the Configuration screen.

When a program that is on an existing fixture is edited while the fixture is connected, the changes will be saved to the fixture and the local copy of the program. If no local copy exists, one will be created.



If a program is selected which is not currently running on a connected fixture, the local copy will be updated. It can be placed onto a connected fixture using the drag and drop method discussed above.

## Constant Mode Programs



Constant programs assume you are using an external timer to start and stop the fixture. Only the channel settings can be manipulated.

- The program name can be set by typing the desired value into the Program Name field.
- To set the channel values, use the sliders to set the output levels for each.



# Basic Mode Programs

Go to: Program Manager

Program Name:

Mode: Basic Type: ☒ Flats ☐ Slope

**Time Settings**

On Time: 00:00

Light Period: 00:00

**Light Settings**

UV: 0%

White: 0%

Amber: 0%

Blue: 0%

Red: 0%

Back Import Values From: Select Existing Program Save Program

Basic programs allow you to set a start time and a run time, as well as output levels for each color channel.

- The program name can be set by typing the desired value into the Program Name field.
- To set the time the light turns on, enter a value in the On Time field.
- To set the length of time the light will be on, enter a value in the Light Period field.
- To set the channel values, use the sliders to set the output levels for each.



## Day Mode Programs

**Edit Day Settings**

Go to: Program Manager

Program Name:

Mode: Day Type: ☒ Flats ☐ Slope

**Sun**

**Time Settings**

Sunrise Time

Sunlight Period

**Light Settings**

UV

White

Amber

Blue

Red

**Moon**

**Time Settings**

Moonrise Time

Moonlight Period

Moon Phase

**Light Settings**

UV

White

Amber

Blue

Red

Back Import Values From: Select Existing Program Save Program

Day programs have use both timing schedules, one to imitate the sun, and one the moon. The color channel outputs are set independently. The Moon Phase is used to scale the Moon output. It is typically set at 100% when running in Day Mode.

- The program name can be set by typing the desired value into the Program Name field.
- To set the time the sun or moon rises, enter a value in the Rise Time fields.
- To set the length of time the sun or moon is up, enter a value in the Period fields.
- To set the channel values, use the sliders to set the output levels for each.



## Custom - Annual Mode Programs

Go to: Program Manager

Program Name:

Mode: Custom - Annual Type: ☒ Flats ☐ Slope

Select Lunar Solar Schedule:

You can download a schedule file from [www.acrooptics.com](http://www.acrooptics.com) or you can use a custom schedule that has 365 days.

**Sun Light Settings**

UV  0%

White  0%

Amber  0%

Blue  0%

Red  0%

**Moon Light Settings**

UV  0%

White  0%

Amber  0%

Blue  0%

Red  0%

Import Values From:

Custom Annual programs are 365 day programs with imported values for sunrise and day length, moon rise and moon length, and moon phase values. At the end of the 365 days, the program will start over, but with an offset that adjusts the solar and lunar values as necessary to carry over to the next year.

- The program name can be set by typing the desired value into the Program Name field.
- To set the channel values, use the sliders to set the output levels for each.



## Adding a Lunar-Solar schedule to a Custom-Annual Program

When creating a Custom Annual program, schedules containing the daily sun and moon time and phase values are required. These schedules can be generated for any location on the globe on our website, AcroOptics.com. If a schedule has been used in an existing program, it can also be pulled from that program to the one being edited by selecting the **Browse** button next to the **Select Lunar-Solar Schedule** box.

In either method, browse to the folder that contains the schedule or program, and select the associated file. For example, if a schedule has been downloaded from our website, browse to the Downloads folder (IE) and select the file.

To create a schedule from our website, Select Tools>Solar/Lunar Schedule. You will see a map of the globe. Select the location for which you would like to create a schedule using the cursor. The globe can be navigated using the arrows, and there are buttons for zooming in or out.

When a specific locations has been selected, the name and lat/long coordinates will appear in the boxes below the map. When you have selected your desired location, use the Submit button to generate the schedule. Follow the prompts to download to your computer.



**Note:** Once a program has been created, the program file will appear as a default in the Solar/Lunar Schedule input box. Schedules downloaded from our website are text (.txt) files, saved programs are .ao files. Looking at the file extension will tell you what type of file you are looking at.

Programs are stored in an AcroOptics folder on your computer when the software is installed. If you have chosen the default installation, you can find the folder by looking in the advanced tab, and selecting Open Log Folder button. That will take you to the AcroOptics folder, in the Logs sub-folder. There will be another sub-folder called Programs.

## Custom Defined Programs

The screenshot shows the 'Edit Custom Annual Settings' window in the AcroOptics software. The window has a purple title bar and a light gray background. At the top, there is a 'Go to: Program Manager' dropdown and the 'AcroOptics' logo. The main area is divided into several sections:

- Program Name:** A text input field.
- Mode:** A dropdown menu set to 'Custom - Defined'.
- Type:** Radio buttons for 'Plate' (selected) and 'Slope'.
- Applies to:** Radio buttons for 'Sun' (selected) and 'Moon'.
- Use lunar function:** A checked checkbox.
- Day Selection:** A section with 'Number of days: 1' and a list box containing 'Day 1'.
- Advanced Selection:** A section with 'Start day: 1', 'End day: 1', and 'Interval: 1'. It includes 'Clear' and 'Select' buttons.
- Time Settings:** A section with 'Sunrise Time' and 'Sunlight Period' both set to '00:00'.
- Light Settings:** A section with five color-coded sliders (UV, White, Amber, Blue, Red) all set to 0%.
- Bottom:** A 'Back' button, an 'Import Values From: Select Existing Program' dropdown, and a 'Save Program' button.



**Custom Defined** programs are those where the numbers of days in the schedule are set by the user, up to 500 days. After the program has completed its cycle it will start over at the beginning. Day 1 is the day the program is saved to a fixture.

The specific days to set values for can be selected from the list of days. Multiple days can be set simultaneously by choosing the first day, holding the shift button, and using the down/up arrows on your keyboard to select the days to apply values for.

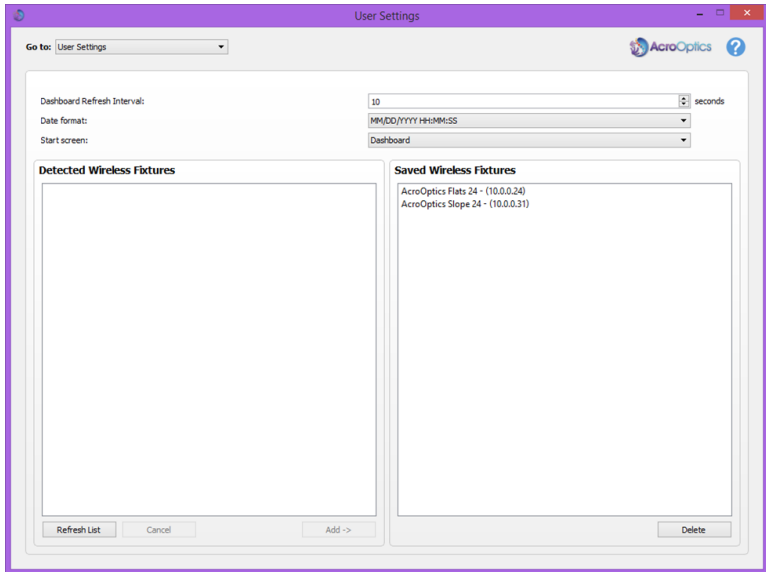
The **Advanced Selection** will allow you to enter patterns, i.e. every third day, by selecting the start day, and the number of days to repeat a given set of values. Selecting Day 1 as the start, and an interval of 3, will select days 1,4,7,10, etc. If no end day value is entered, the pattern will repeat for the entire schedule. If an end day value is entered, the pattern will repeat until that day.

Values are needed for all days. If a day is red in the day selection list, no values have been entered. In this case, attempting to save the program will generate a warning message that not all values are present.

Similar to the lunar/solar schedules, you can import settings from an existing saved program by selecting it from the **Import Values From** box. Use the drop-down to select the program you wish to import values from.



## User Settings Screen



The **User Settings** screen allows you to customize how the application behaves. It also allows for newly-detected wireless fixtures to be saved for easy recall.

**Dashboard Refresh Interval:** How frequently the dashboard refreshes, in seconds. Use the up/down arrows to edit. *When the dashboard is refreshing, navigation and editing is locked, so as not to interfere with the fixture communication*

**Date Format:** Select the date format with which you are comfortable.

**Start Screen:** dictates which screen appears first when the application is opened.



**Detected Wireless Fixtures** displays fixtures that have been detected but not saved. Saving a fixture makes the connection faster to open.

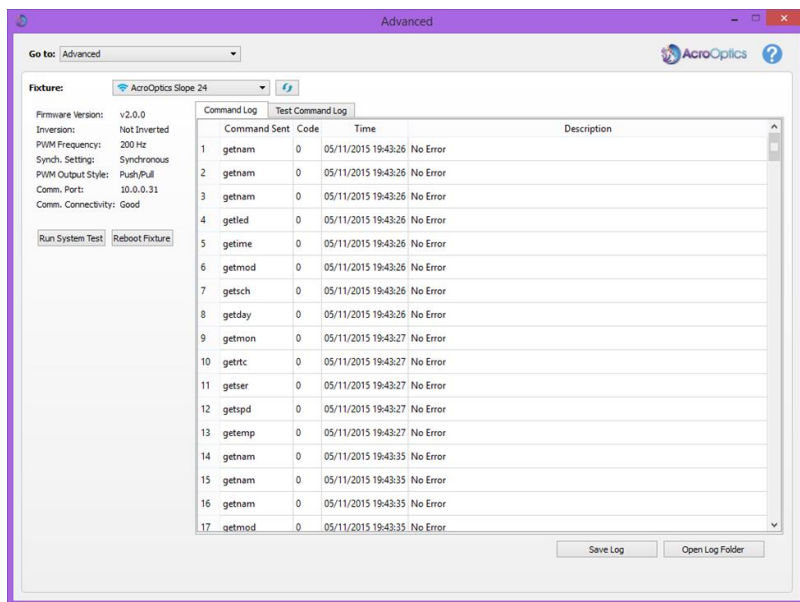
**Saved Wireless Fixtures** displays a list of all fixtures that have been configured for WiFi and saved for quick connection.

**Refresh List** refreshes the list of detected fixtures. Use this if you have added a new fixture.

**Delete** allows you to delete a saved fixture.



## Advanced Screen



The **Advanced Screen** is for trouble-shooting and updating firmware. When connected over a wireless network, the **Firmware Update** option is not available. Firmware can only be loaded over USB connections.

### To update firmware<sup>1</sup>:

1. Download the update from our website, [AcroOptics.com](http://AcroOptics.com)
2. Plug a USB cable into the computer and the fixture.
3. Select the USB connection from the Fixture drop-down.
4. Select Update Firmware

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<sup>1</sup> **DO NOT UNPLUG THE USB CABLE OR POWER UNTIL THE FIRMWARE UPDATE IS COMPLETE!**



5. Browse to the location of the update file, and select the file.

6. Hit Update Firmware, and follow the on screen instructions.

**Run System Test** will kick off a test process that scrolls through a set of commands to confirm they are working. A separate log is kept for test commands and responses.

**Reboot Fixture** will shut down and restart the selected fixture.

**Save Log** will allow you to save the log you are viewing as a .txt file for review.

**Open Log Folder** will open the location where the fixture logs are kept. From there you can review or delete logs.

## **Fixture Maintenance**

To clean:

Disconnect the power supply, and wipe the fixture with a clean, lint-free cloth or paper towel.

If the lenses become dirty, they can be wiped with a clean, damp lint-free cloth.

If there is significant calcium build up, use a paper towel that has been dampened with a small amount of vinegar to remove the build-up. Then clean the lenses again clean, lint-free cloth or paper towel to remove any trace of the vinegar solution. Vinegar is acidic, and can damage the lenses.



## Appendix A – Mode Reference Chart

Value	Description	Constant	Basic	Day	Custom
<b>Sunrise Hours</b>	Hour portion of sunrise time		X	X	X
<b>Sunrise Minutes</b>	Minute portion of sunrise time		X	X	X
<b>Sun Length Hours</b>	Hour portion of the length of sunlight		X	X	X
<b>Sun Length Minutes</b>	Minute portion of the length of sunlight		X	X	X
<b>Moonrise Hours</b>	Hour portion of Moonrise time			X	X
<b>Moonrise Minutes</b>	Minute portion of Moonrise time			X	X
<b>Moon Length Hours</b>	Hour portion of the length of Moonlight			X	X
<b>Moon Length Minutes</b>	Minute portion of the length of Moonlight			X	X
<b>Moon Phase</b>	Moon Phase			X	X
<b>Sun UV LED</b>	UV output - sunlight	X	X	X	X
<b>Sun White LED</b>	White (broad spectrum) output - sunlight	X	X	X	X
<b>Sun Amber LED</b>	<b>Amber (broad spectrum) output - sunlight</b>	X	X	X	X
<b>Sun Blue LED</b>	Blue output - sunlight	X	X	X	X

**Note: The actual color channel names will depend on the fixture version you are running.**



Value	Description	Constant	Basic	Day	Custo m
Sun Red LED	Red output - sunlight	X	X	X	X
Moon UV LED	UV output - moonlight			X	X
Moon White LED	White (broad spectrum) output - moonlight			X	X
Moon Amber LED	Amber (broad spectrum) output - moonlight			X	X
Moon Blue LED	Blue output - moonlight			X	X
Moon Red LED	Red output - moonlight			X	X
Moon Phase	Phase of the moon			X	X
# of Days	Number of days for an N Day mode				X
Use Lunar Function	Offset for lunar time/phase (Custom mode)				X



## Troubleshooting


There is an up-to-date FAQ on our website at [www.AcroOptics.com](http://www.AcroOptics.com) to resolve common issues. If the FAQ doesn't answer your question, please check our forums for similar issues or post a new thread for us to respond too.

You can also email [support@AcroOptics.com](mailto:support@AcroOptics.com) for further assistance.

When I plug in the USB to my computer, I get an "Unrecognized Device" message:

*With the USB cord attached, turn the power to the fixture off (unplug the DC cord, or turn the power supply switch to 0).*

I have configured my fixture for wireless, but the application doesn't show the fixture.

*Confirm that the wifi is still connected – local wireless interruptions may cause the fixture to lose connectivity. In the upper right corner of the LCD screen, there should be a  icon. If it does not appear, hold the up and down buttons simultaneously for about 3 seconds. You will see a message Retrieving IP Address. The wifi will reconnect.*

When I open the application, it gets stuck looking for the fixture:

*Close the application, and check the wifi icon on the fixture. If it does not appear, reconnect the wifi as above. Then re-open the application.*



## Limited Warranty

**IMPORTANT NOTICE:** Read this entire Limited Warranty before purchasing, installing, or using this product. By purchasing, installing, or using this product, you are acknowledging that this Limited Warranty is part of the sale terms. **COVERED PRODUCTS.** This Limited Warranty applies to the following CRAVE fixture (hereinafter referred to as the "Covered Products"). AcroOptics makes the following express limited warranties for the Covered Products purchased within the United States, subject to the conditions and limitations stated below. These limited warranties are the exclusive warranties for the Covered Products. AcroOptics disclaims all warranties, express or implied, for other products.

**LIMITED WARRANTIES.** The CRAVE is warranted to be free from defects in material and workmanship under normal use for period of (3) years from the date of original purchase. The LED bulb clusters in the CRAVE are warranted to be free from defects in material and workmanship under normal use for period of (3) years from the date of original purchase. This limited warranty is extended to the original buyer of the Covered Products (the "Buyer"). AcroOptics disclaims all warranties, express or implied, to subsequent purchasers or users. If the Buyer gives AcroOptics notice as required below of a defect in materials or workmanship, AcroOptics shall, at its sole option: (1) repair or replace the defective products; or (2) refund the original purchase price. Replacement products may not exactly match replaced products. AcroOptics shall not be held liable for damage to any aquarium, aquarium life forms, or other personal objects due to improper use of the Covered Products.

**FAILURE TO COMPLY WITH THE INSTALLATION AND OPERATING INSTRUCTIONS VOIDS ALL WARRANTIES UNLESS THE BUYER ESTABLISHES THAT THE DEFECTIVE CONDITION IS NOT RELATED TO SUCH NONCOMPLIANCE.**

This Limited Warranty does not extend to the use of the Covered Products under abnormal conditions, conditions that exceed the stated performance parameters of the products as provided on the product labeling and in the manual or instructions provided with the Covered Products, or under conditions not reasonably foreseeable to, or beyond the control of, AcroOptics. Buyer assumes all risk of any such use. Any attempts at self- repair shall void this limited warranty.

**WHAT THIS LIMITED WARRANTY DOES NOT COVER.** AcroOptics is not responsible for and makes no warranties as to the following: 1) product failures or damage due to normal wear and tear, exposure to excessive



heat or moisture, corrosive chemicals or substances, improper installation, defects or conditions of the existing structure, misuse, abuse, modifications, and alterations; and 2) minor imperfections that do not affect the Covered Product's structural integrity or use.

**DISCLAIMER OF IMPLIED WARRANTIES.** Neither AcroOptics, nor its authorized dealers, make any other warranties, express or implied, including any implied warranties of merchantability or fitness for a particular purpose. In the event this disclaimer is deemed limited or ineffective, the terms and limitations of any implied warranties shall be the same as the express limited warranties contained herein.

**LIMITATION OF LIABILITY. ALL WARRANTIES ARE VOID IF THERE IS DAMAGE TO THE COVERED PRODUCTS THAT IS NOT A RESULT OF A DEFECT IN THE MATERIALS OR WORKMANSHIP. THE SOLE AND EXCLUSIVE REMEDY FOR ALL CLAIMS THAT YOU MAY HAVE ARISING OUT OF OR IN CONNECTION WITH YOUR USE OF THIS PRODUCT, WHETHER MADE OR SUFFERED BY YOU OR ANOTHER PERSON AND WHETHER BASED IN CONTRACT OR TORT, SHALL BE REPAIR OR REPLACEMENT OF THE PRODUCT. IN NO EVENT WILL AcroOptics BE LIABLE TO YOU OR ANY OTHER PARTY FOR ANY DIRECT, INDIRECT, GENERAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY OR OTHER DAMAGES ARISING OUT OF THE USE OR INABILITY OF TO USE THE PRODUCT (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF INFORMATION OR ANY OTHER PECUNIARY LOSS, DAMAGE TO YOUR AQUARIUM OR ANY AQUARIUM INHABITANTS, DAMAGE TO PLANTS OR LIVESTOCK), OR FROM ANY BREACH OF WARRANTY, EVEN IF AcroOptics HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO CASE SHALL AcroOptics' LIABILITY EXCEED THE AMOUNT YOU PAID FOR THE PRODUCT. IF YOU DISAGREE WITH THESE TERMS AND CONDITIONS DO NOT USE THE COVERED PRODUCTS.**

**NOTICE OF CLAIM.** Buyer shall promptly notify AcroOptics of any claim under this Limited Warranty. AcroOptics reserves the right to deny any claims made by the Buyer more than one (1) year after any defect or other basis of a claim covered by this Limited Warranty is discovered by the Buyer or should have been discovered by the Buyer.

**CLAIM PROCEDURE.** To obtain warranty service or technical support, please contact AcroOptics's customer service department at [Support@AcroOptics.com](mailto:Support@AcroOptics.com), or by phone at **(303) 495-5422**. You will receive instructions on how to return the product for repair or replacement. To take advantage of this Limited Warranty you will be required to supply an original point of purchase receipt. Buyer shall be



responsible for shipment and insurance costs to send Covered Products to AcroOptics.

**ENTIRE AGREEMENT.** This Limited Warranty, and all of the terms and limitations contained herein, constitutes the entire agreement between AcroOptics and the Buyer. By purchasing, installing, or using the Covered Products, Buyer is not relying on any oral statements made by anyone, including its authorized dealers, which are in any way different or contrary to the terms and limitations of this Limited Warranty. By purchasing, installing, or using any of the Covered Products, Buyer acknowledges that authorized dealerships are not agents of AcroOptics and any statements or representations made by authorized dealerships and their employees are not attributable to AcroOptics. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. AcroOptics' warranty is governed by the laws of the Commonwealth of Colorado, excluding its conflict of laws principles and excluding the provisions of the United Nations Convention on Contracts for the International Sale of Goods. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. If AcroOptics provides any of the remedies identified above (i.e. repair, replace, or return of the original purchase price), then Buyer agrees that this limitation of remedy shall not have failed the essential purpose of the Limited Warranty.

#### **FCC & CE Information**

1. DO NOT look directly at LEDs regardless of intensity.
2. This product carries an ingress protection rating of IPX0 and must not be immersed in water.
3. Danger: To avoid possible electrical shock, special care should be taken since water is employed in the use of aquarium equipment.
4. DO NOT attempt repairs yourself; return the appliance to the manufacturer for service or discard.
5. DO NOT immerse in water. If the appliance falls into the water, DON'T reach for it! First unplug it and then retrieve it. If electrical components of the appliance get wet, unplug the appliance immediately (non-immersible equipment only).
6. Carefully examine the appliance after installation. It should not be plugged in if there is water on parts not intended to be wet.
7. The Crave is NOT WATERPROOF; water can permanently damage it. This damage IS NOT covered under warranty. Protect these components from splashes, drips, or other contact with water.



8. Do not operate any appliance if it has a damaged cord or plug, or if it is malfunctioning or if it is dropped or damaged in any manner. The power cord of this appliance cannot be replaced: If the cord is damaged, the appliance should be discarded. Never cut the cord. DO NOT DROP. The Crave Light is fragile, and a fall onto a hard surface can result in permanent damage. Damage from dropping IS NOT covered under warranty.
9. If the plug or receptacle does get wet, DON'T unplug the cord. Disconnect the power to the appliance, then unplug and examine for presence of water in the receptacle.
10. Close supervision is necessary when an appliance is used by or near children. Keep out of reach of young children.
11. Always unplug appliance from outlet and battery backup when not in use, before putting on or taking off parts, and before cleaning.
12. Never yank cord to pull plug from wall outlet. Grasp the plug and pull to disconnect.
13. Do not use appliance for other than intended use. The use of attachments not recommended or sold by the manufacturer may cause an unsafe condition.
14. Do not install or store the appliance where it will be exposed to weather or to temperatures below freezing.
15. Make sure appliance is securely installed before operating it. Read and observe all the important notices on the appliance.
16. If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less amperes or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
17. Do not operate the Crave in an enclosure that does not allow for proper air circulation.
18. Do not attempt to dismantle or modify LED arrays or driver board assemblies as this may result in injury and will void the warranty.
19. Ensure local cabling can support the voltage and current requirements of the fixture.
20. Be sure any external timers can deal with the inrush current of the fixture.



**European Union - Disposal Information:**

This symbol means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

**FCC Compliance Statement**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. Any changes or modifications not expressly approved by AcroOptics could void the user's authority to operate the WiFi module, and/or the product that incorporates the WiFi Module.

**CE Declaration of Conformity**

The equipment complies with the RF exposure Requirement 1999/5/EEC, Council Recommendation on the limitation of exposure of the general public to electromagnetic fields (0-300 GHz). This equipment meets the following conformance standards:  
EN 300 328, EN 301 489-17

This device contains:

AcroOptics' WiFi Module  
Part Number: RN171-I/RM  
FCC ID: T9J-RN171  
IC: 6514A-RN171